

$f_0(1500)$ $I^G(J^P C) = 0^+(0^{++})$

See also the mini-reviews on scalar mesons under $f_0(500)$ (see the index for the page number) and on non- $q\bar{q}$ candidates in PDG 06, Journal of Physics, G **33** 1 (2006).

NODE=M152

NODE=M152

NODE=M152M

NODE=M152M

 $f_0(1500)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
1505± 6 OUR AVERAGE				Error includes scale factor of 1.3. See the ideogram below.
1466± 6± 20		ABLIKIM 06v	BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \pi^+ \pi^-$
1515±12		1 BARBERIS 00A		$p p \rightarrow p_f \eta \eta p_s$
1511± 9		1,2 BARBERIS 00C		$450 p p \rightarrow p_f 4\pi p_s$
1510± 8		1 BARBERIS 00E		$450 p p \rightarrow p_f \eta \eta p_s$
1522±25		BERTIN 98	OBLX	$0.05-0.405 \bar{p} p \rightarrow \pi^+ \pi^+ \pi^-$
1449±20		1 BERTIN 97C	OBLX	$0.0 \bar{p} p \rightarrow \pi^+ \pi^- \pi^0$
1515±20		ABELE 96B	CBAR	$0.0 \bar{p} p \rightarrow \pi^0 K_L^0 K_L^0$
1500±15		3 AMSLER 95B	CBAR	$0.0 \bar{p} p \rightarrow 3\pi^0$
1505±15		4 AMSLER 95C	CBAR	$0.0 \bar{p} p \rightarrow \eta \eta \pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1486±10		1 ANISOVICH 09	RVUE	$0.0 \bar{p} p, \pi N$
1470±60	568	5 KLEMPT 08	E791	$D_s^+ \rightarrow \pi^- \pi^+ \pi^+$
1470 ^{+ 6 + 72} - 7 - 255		6 UEHARA 08A	BELL	$10.6 e^+ e^- \rightarrow e^+ e^- \pi^0 \pi^0$
1495± 4		AMSLER 06	CBAR	$0.9 \bar{p} p \rightarrow K^+ K^- \pi^0$
1539±20	9.9k	AUBERT 060	BABR	$B^+ \rightarrow K^+ K^+ K^-$
1473± 5	80k	7,8 UMAN 06	E835	$5.2 \bar{p} p \rightarrow \eta \eta \pi^0$
1478± 6		VLADIMIRSK...06	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
1493± 7		7 BINON 05	GAMS	$33 \pi^- p \rightarrow \eta \eta n$
1524±14	1400	9 GARMASH 05	BELL	$B^+ \rightarrow K^+ K^+ K^-$
1489 ^{+ 8} - 4		10 ANISOVICH 03	RVUE	
1490±30		7 ABELE 01	CBAR	$0.0 \bar{p} d \rightarrow \pi^- 4\pi^0 p$
1497±10		7 BARBERIS 99	OMEG	$450 p p \rightarrow p_s p_f K^+ K^-$
1502±10		7 BARBERIS 99B	OMEG	$450 p p \rightarrow p_s p_f \pi^+ \pi^-$
1502±12± 10		11 BARBERIS 99D	OMEG	$450 p p \rightarrow K^+ K^-, \pi^+ \pi^-$
1530±45		7 BELLAZZINI 99	GAM4	$450 p p \rightarrow p p \pi^0 \pi^0$
1505±18		7 FRENCH 99		$300 p p \rightarrow p_f (K^+ K^-) p_s$
1447±27		12 KAMINSKI 99	RVUE	$\pi \pi \rightarrow \pi \pi, K \bar{K}, \sigma \sigma$
1580±80		7 ALDE 98	GAM4	$100 \pi^- p \rightarrow \pi^0 \pi^0 n$
1499± 8		1 ANISOVICH 98B	RVUE	Compilation
~ 1520		REYES 98	SPEC	$800 p p \rightarrow p_s p_f K_S^0 K_S^0$
1510±20		1 BARBERIS 97B	OMEG	$450 p p \rightarrow p p 2(\pi^+ \pi^-)$
~ 1475		FRABETTI 97D	E687	$D_s^\pm \rightarrow \pi^\mp \pi^\pm \pi^\pm$
~ 1505		ABELE 96	CBAR	$0.0 \bar{p} p \rightarrow 5\pi^0$
1500± 8		1 ABELE 96C	RVUE	Compilation
1460±20	120	7 AMELIN 96B	VES	$37 \pi^- A \rightarrow \eta \eta \pi^- A$
1500± 8		BUGG 96	RVUE	
1500±10		13 AMSLER 95D	CBAR	$0.0 \bar{p} p \rightarrow \pi^0 \pi^0 \pi^0, \pi^0 \eta \eta, \pi^0 \pi^0 \eta$
1445± 5		14 ANTINORI 95	OMEG	$300, 450 p p \rightarrow p p 2(\pi^+ \pi^-)$
1497±30		7 ANTINORI 95	OMEG	$300, 450 p p \rightarrow p p \pi^+ \pi^-$
~ 1505		BUGG 95	MRK3	$J/\psi \rightarrow \gamma \pi^+ \pi^- \pi^+ \pi^-$
1446± 5		7 ABATZIS 94	OMEG	$450 p p \rightarrow p p 2(\pi^+ \pi^-)$
1545±25		7 AMSLER 94E	CBAR	$0.0 \bar{p} p \rightarrow \pi^0 \eta \eta'$
1520±25		1,15 ANISOVICH 94	CBAR	$0.0 \bar{p} p \rightarrow 3\pi^0, \pi^0 \eta \eta$
1505±20		1,16 BUGG 94	RVUE	$\bar{p} p \rightarrow 3\pi^0, \eta \eta \pi^0, \eta \pi^0 \pi^0$
1560±25		7 AMSLER 92	CBAR	$0.0 \bar{p} p \rightarrow \pi^0 \eta \eta$
1550±45± 30		7 BELADIDZE 92C	VES	$36 \pi^- Be \rightarrow \pi^- \eta' \eta Be$
1449± 4		7 ARMSTRONG 89E	OMEG	$300 p p \rightarrow p p 2(\pi^+ \pi^-)$
1610±20		7 ALDE 88	GAM4	$300 \pi^- N \rightarrow \pi^- N 2\eta$
~ 1525		ASTON 88D	LASS	$11 K^- p \rightarrow K_S^0 K_S^0 \Lambda$
1570±20	600	7 ALDE 87	GAM4	$100 \pi^- p \rightarrow 4\pi^0 n$

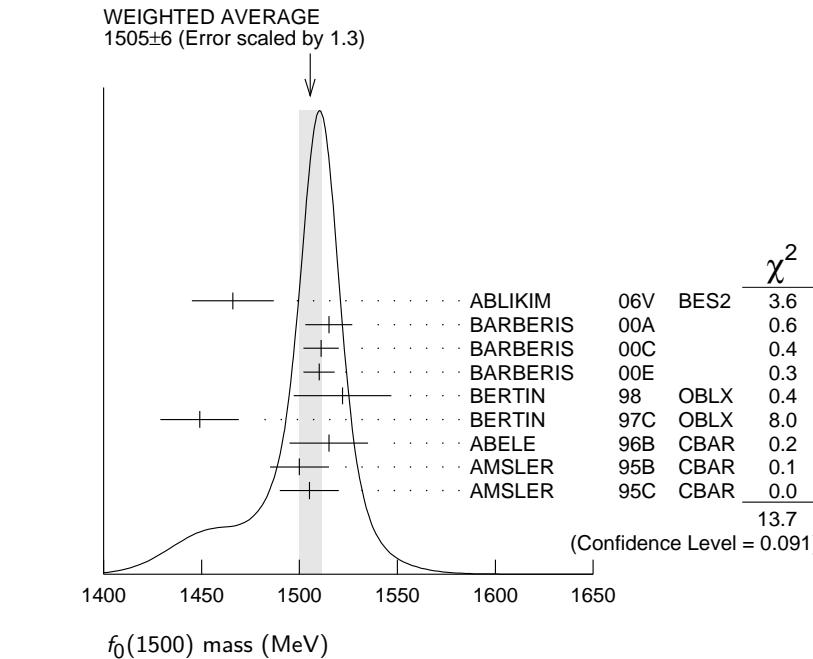
OCCUR=2

1575±45	17 ALDE	86D GAM4 100	$\pi^- p \rightarrow 2\eta n$
1568±33	7 BINON	84C GAM2 38	$\pi^- p \rightarrow \eta\eta' n$
1592±25	7 BINON	83 GAM2 38	$\pi^- p \rightarrow 2\eta n$
1525± 5	7 GRAY	83 DBC 0.0	$\bar{p}N \rightarrow 3\pi$
1 T-matrix pole.			
2 Average between $\pi^+\pi^-2\pi^0$ and $2(\pi^+\pi^-)$.			
3 T-matrix pole, supersedes ANISOVICH 94.			
4 T-matrix pole, supersedes ANISOVICH 94 and AMSLER 92.			
5 Reanalysis of AITALA 01A data. This state could also be $f_0(1370)$.			
6 Breit-Wigner mass. May also be the $f_0(1370)$.			
7 Breit-Wigner mass.			
8 Statistical error only.			
9 Breit-Wigner, solution 1, PWA ambiguous.			
10 K-matrix pole from combined analysis of $\pi^- p \rightarrow \pi^0\pi^0 n$, $\pi^- p \rightarrow K\bar{K}n$, $\pi^+\pi^- \rightarrow \pi^+\pi^-$, $\bar{p}p \rightarrow \pi^0\pi^0\pi^0$, $\pi^0\eta\eta$, $\pi^0\pi^0\eta$, $\pi^+\pi^-\pi^0$, $K^+K^-\pi^0$, $K_S^0K_S^0\pi^0$, $K^+K_S^0\pi^-$ at rest, $\bar{p}n \rightarrow \pi^-\pi^-\pi^+$, $K_S^0K^-K^0\pi^-$, $K_S^0K_S^0\pi^-$ at rest.			

- 11 Supersedes BARBERIS 99 and BARBERIS 99B.
 12 T-matrix pole on sheet $--+$.
 13 T-matrix pole. Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.
 14 Supersedes ABATZIS 94, ARMSTRONG 89E. Breit-Wigner mass.
 15 From a simultaneous analysis of the annihilations $\bar{p}p \rightarrow 3\pi^0, \pi^0\eta\eta$.
 16 Reanalysis of ANISOVICH 94 data.
 17 From central value and spread of two solutions. Breit-Wigner mass.

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 NODE=M152M;LINKAGE=GA
 NODE=M152M;LINKAGE=KM

NODE=M152M;LINKAGE=BD
 NODE=M152M;LINKAGE=TK
 NODE=M152M;LINKAGE=AB
 NODE=M152M;LINKAGE=B
 NODE=M152M;LINKAGE=A
 NODE=M152M;LINKAGE=C1
 NODE=M152M;LINKAGE=AZ



$f_0(1500)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
109± 7 OUR AVERAGE				
108 ₋ ⁺ 14 ₋ ²⁵		ABLIKIM	06V BES2	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma\pi^+\pi^-$
110± 24	18	BARBERIS	00A	$450 \bar{p}p \rightarrow p_f\eta\eta p_s$
102± 18	18, ¹⁹	BARBERIS	00C	$450 \bar{p}p \rightarrow p_f 4\pi p_s$
110± 16	18	BARBERIS	00E	$450 \bar{p}p \rightarrow p_f\eta\eta p_s$
108± 33		BERTIN	98 OBLX	0.05–0.405 $\bar{p}p \rightarrow \pi^+\pi^+\pi^-$
114± 30	18	BERTIN	97C OBLX	0.0 $\bar{p}p \rightarrow \pi^+\pi^-\pi^0$
105± 15		ABELE	96B CBAR	0.0 $\bar{p}p \rightarrow \pi^0 K_L^0 K_L^0$
120± 25	20	AMSLER	95B CBAR	0.0 $\bar{p}p \rightarrow 3\pi^0$
120± 30	21	AMSLER	95C CBAR	0.0 $\bar{p}p \rightarrow \eta\eta\pi^0$

NODE=M152W

NODE=M152W

OCCUR=2

• • • We do not use the following data for averages, fits, limits, etc. • • •

114± 10	18	ANISOVICH	09	RVUE	0.0 $\bar{p}p, \pi N$
90+ 2+50 1- 22	22	UEHARA	08A	BELL	10.6 $e^+ e^- \rightarrow e^+ e^- \pi^0 \pi^0$
121± 8		AMSLER	06	CBAR	0.9 $\bar{p}p \rightarrow K^+ K^- \pi^0$
257± 33	9.9k	AUBERT	060	BABR	$B^+ \rightarrow K^+ K^+ K^-$
108± 9	80k	UMAN	06	E835	5.2 $\bar{p}p \rightarrow \eta \eta \pi^0$
119± 10		VLADIMIRSK...	06	SPEC	$40 \pi^- p \rightarrow K_S^0 K_S^0 n$
90± 15	23	BINON	05	GAMS	$33 \pi^- p \rightarrow \eta \eta n$
136± 23	1400	GARMASH	05	BELL	$B^+ \rightarrow K^+ K^+ K^-$
102± 10		ANISOVICH	03	RVUE	
140± 40	23	ABELE	01	CBAR	$0.0 \bar{p}d \rightarrow \pi^- 4\pi^0 p$
104± 25	23	BARBERIS	99	OMEG	$450 pp \rightarrow p_s p_f K^+ K^-$
131± 15	23	BARBERIS	99B	OMEG	$450 pp \rightarrow p_s p_f \pi^+ \pi^-$
98± 18±16		BARBERIS	99D	OMEG	$450 pp \rightarrow K^+ K^-, \pi^+ \pi^-$
160± 50	23	BELLAZZINI	99	GAM4	$450 pp \rightarrow pp \pi^0 \pi^0$
100± 33	23	FRENCH	99		$300 pp \rightarrow p_f (K^+ K^-) p_s$
108± 46	28	KAMINSKI	99	RVUE	$\pi\pi \rightarrow \pi\pi, K\bar{K}, \sigma\sigma$
280±100	23	ALDE	98	GAM4	$100 \pi^- p \rightarrow \pi^0 \pi^0 n$
130± 20	18	ANISOVICH	98B	RVUE	Compilation
120± 35	18	BARBERIS	97B	OMEG	$450 pp \rightarrow pp 2(\pi^+ \pi^-)$
~ 100		FRABETTI	97D	E687	$D_s^\pm \rightarrow \pi^\mp \pi^\pm \pi^\pm$
~ 169		ABELE	96	CBAR	$0.0 \bar{p}p \rightarrow 5\pi^0$
100± 30	120	23	AMELIN	VES	$37 \pi^- A \rightarrow \eta \eta \pi^- A$
132± 15		BUGG	96	RVUE	
154± 30		29	AMSLER	95D	CBAR $0.0 \bar{p}p \rightarrow \pi^0 \pi^0 \pi^0, \pi^0 \eta \eta, \pi^0 \pi^0 \eta$
65± 10	30	ANTINORI	95	OMEG	$300, 450 pp \rightarrow pp 2(\pi^+ \pi^-)$
199± 30	23	ANTINORI	95	OMEG	$300, 450 pp \rightarrow pp \pi^+ \pi^-$
56± 12	23	ABATZIS	94	OMEG	$450 pp \rightarrow pp 2(\pi^+ \pi^-)$
100± 40	23	AMSLER	94E	CBAR	$0.0 \bar{p}p \rightarrow \pi^0 \eta \eta'$
148+ 20 - 25	18,31	ANISOVICH	94	CBAR	$0.0 \bar{p}p \rightarrow 3\pi^0, \pi^0 \eta \eta$
150± 20	18,32	BUGG	94	RVUE	$\bar{p}p \rightarrow 3\pi^0, \eta \eta \pi^0, \eta \pi^0 \pi^0$
245± 50	23	AMSLER	92	CBAR	$0.0 \bar{p}p \rightarrow \pi^0 \eta \eta$
153± 67±50	23	BELADIDZE	92C	VES	$36 \pi^- Be \rightarrow \pi^- \eta' \eta Be$
78± 18	23	ARMSTRONG	89E	OMEG	$300 pp \rightarrow pp 2(\pi^+ \pi^-)$
170± 40	23	ALDE	88	GAM4	$300 \pi^- N \rightarrow \pi^- N 2\eta$
150± 20	600	23	ALDE	87	GAM4 $100 \pi^- p \rightarrow 4\pi^0 n$
265± 65	33	ALDE	86D	GAM4	$100 \pi^- p \rightarrow 2\eta n$
260± 60	23	BINON	84C	GAM2	$38 \pi^- p \rightarrow \eta \eta' n$
210± 40	23	BINON	83	GAM2	$38 \pi^- p \rightarrow 2\eta n$
101± 13	23	GRAY	83	DBC	$0.0 \bar{p}N \rightarrow 3\pi$

18 T-matrix pole.

19 Average between $\pi^+ \pi^- 2\pi^0$ and $2(\pi^+ \pi^-)$.

20 T-matrix pole, supersedes ANISOVICH 94.

21 T-matrix pole, supersedes ANISOVICH 94 and AMSLER 92.

22 Breit-Wigner width. May also be the $f_0(1370)$.

23 Breit-Wigner width.

24 Statistical error only.

25 Breit-Wigner, solution 1, PWA ambiguous.

26 K-matrix pole from combined analysis of $\pi^- p \rightarrow \pi^0 \pi^0 n, \pi^- p \rightarrow K\bar{K}n, \pi^+ \pi^- \rightarrow \pi^+ \pi^-, \bar{p}p \rightarrow \pi^0 \pi^0 \pi^0, \pi^0 \eta \eta, \pi^0 \eta \eta, \pi^+ \pi^- \pi^0, K^+ K^- \pi^0, K_S^0 K_S^0 \pi^0, K^+ K_S^0 \pi^-$ at rest, $\bar{p}n \rightarrow \pi^- \pi^- \pi^+, K_S^0 K^- \pi^0, K_S^0 K_S^0 \pi^-$ at rest.

27 Supersedes BARBERIS 99 and BARBERIS 99B.

28 T-matrix pole on sheet -- +.

29 T-matrix pole. Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.

30 Supersedes ABATZIS 94, ARMSTRONG 89E. Breit-Wigner mass.

31 From a simultaneous analysis of the annihilations $\bar{p}p \rightarrow 3\pi^0, \pi^0 \eta \eta$.

32 Reanalysis of ANISOVICH 94 data.

33 From central value and spread of two solutions. Breit-Wigner mass.

OCCUR=2

NODE=M152W;LINKAGE=PP
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 NODE=M152W;LINKAGE=AB

NODE=M152W;LINKAGE=B
 NODE=M152W;LINKAGE=A
 NODE=M152W;LINKAGE=C1
 NODE=M152W;LINKAGE=AZ

$f_0(1500)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)	Scale factor	
$\Gamma_1 \pi\pi$	(34.9 ± 2.3) %	1.2	DESIG=8
$\Gamma_2 \pi^+ \pi^-$	seen		DESIG=9
$\Gamma_3 2\pi^0$	seen		DESIG=3;OUR EST; \rightarrow UNCHECKED \leftarrow
$\Gamma_4 4\pi$	(49.5 ± 3.3) %	1.2	DESIG=7
$\Gamma_5 4\pi^0$	seen		DESIG=5;OUR EST; \rightarrow UNCHECKED \leftarrow
$\Gamma_6 2\pi^+ 2\pi^-$	seen		DESIG=6;OUR EST; \rightarrow UNCHECKED \leftarrow
$\Gamma_7 2(\pi\pi)_S$ -wave	seen		DESIG=11;OUR EST; \rightarrow UNCHECKED \leftarrow
$\Gamma_8 \rho\rho$	seen		DESIG=12;OUR EST; \rightarrow UNCHECKED \leftarrow
$\Gamma_9 \pi(1300)\pi$	seen		DESIG=13;OUR EST; \rightarrow UNCHECKED \leftarrow
$\Gamma_{10} a_1(1260)\pi$	seen		DESIG=14;OUR EST; \rightarrow UNCHECKED \leftarrow
$\Gamma_{11} \eta\eta$	(5.1 ± 0.9) %	1.4	DESIG=1
$\Gamma_{12} \eta\eta'(958)$	(1.9 ± 0.8) %	1.7	DESIG=2
$\Gamma_{13} K\bar{K}$	(8.6 ± 1.0) %	1.1	DESIG=4
$\Gamma_{14} \gamma\gamma$	not seen		DESIG=10;OUR EST; \rightarrow UNCHECKED \leftarrow

CONSTRAINED FIT INFORMATION

An overall fit to 6 branching ratios uses 10 measurements and one constraint to determine 5 parameters. The overall fit has a $\chi^2 = 11.4$ for 6 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_4	-83			
x_{11}	11	-52		
x_{12}	-5	-31	29	
x_{13}	39	-67	33	6
	x_1	x_4	x_{11}	x_{12}

$f_0(1500) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$	$\Gamma_1 \Gamma_{14}/\Gamma$			
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$				
$33^{+12+1809}_{-6-21}$	34	UEHARA	08A BELL	$10.6 e^+ e^- \rightarrow e^+ e^- \pi^0 \pi^0$
not seen		ACCIARRI	01H L3	$\gamma\gamma \rightarrow K_S^0 K_S^0, E_{\text{cm}}^{\text{ee}} = 91, 183-209 \text{ GeV}$
<460	95	BARATE	00E ALEP	$\gamma\gamma \rightarrow \pi^+ \pi^-$

34 May also be the $f_0(1370)$. Multiplied by us by 3 to obtain the $\pi\pi$ value.

NODE=M152217

NODE=M152G1
NODE=M152G1

NODE=M152G1;LINKAGE=UE

NODE=M152220

NODE=M152R8
NODE=M152R8NODE=M152R10
NODE=M152R10

$f_0(1500)$ BRANCHING RATIOS

$\Gamma(\pi\pi)/\Gamma_{\text{total}}$	Γ_1/Γ		
VALUE	DOCUMENT ID	TECN	COMMENT
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$			
0.454 ± 0.104	BUGG	96	RVUE
$\bullet \bullet \bullet$ We do not use the following data for averages, fits, limits, etc. $\bullet \bullet \bullet$			
possibly seen	FRABETTI	97D E687	$D_s^\pm \rightarrow \pi^\mp \pi^\pm \pi^\pm$

$\Gamma(4\pi)/\Gamma(\pi\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_4/Γ_1
1.42±0.18 OUR FIT	Error includes scale factor of 1.2.			
1.42±0.18 OUR AVERAGE	Error includes scale factor of 1.2.			
1.37 ± 0.16	BARBERIS 00D	450 $p p \rightarrow p_f 4\pi p_s$		
2.1 ± 0.6	35 AMSLER 98	RVUE		
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.1 ± 0.2	36 ANISOVICH 02D	SPEC Combined fit		
3.4 ± 0.8	35 ABELE 96	CBAR 0.0 $\bar{p}p \rightarrow 5\pi^0$		

NODE=M152R6
NODE=M152R6 $\Gamma(2(\pi\pi)s\text{-wave})/\Gamma(\pi\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_7/Γ_1
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.42 ± 0.26	37 ABELE 01	CBAR 0.0 $\bar{p}d \rightarrow \pi^- 4\pi^0 p$		

NODE=M152R14
NODE=M152R14 $\Gamma(2(\pi\pi)s\text{-wave})/\Gamma(4\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_7/Γ_4
• • • We do not use the following data for averages, fits, limits, etc. • • •				

NODE=M152R15
NODE=M152R15 $\Gamma(\rho\rho)/\Gamma(4\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_8/Γ_4
• • • We do not use the following data for averages, fits, limits, etc. • • •				

NODE=M152R16
NODE=M152R16 $\Gamma(\rho\rho)/\Gamma(2(\pi\pi)s\text{-wave})$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>COMMENT</u>	Γ_8/Γ_7
• • • We do not use the following data for averages, fits, limits, etc. • • •			
3.3 ± 0.5	BARBERIS 00C	450 $p p \rightarrow p_f \pi^+ \pi^- 2\pi^0 p_s$	
2.6 ± 0.4	BARBERIS 00C	450 $p p \rightarrow p_f 2(\pi^+ \pi^-) p_s$	OCCUR=2

NODE=M152R11
NODE=M152R11 $\Gamma(\pi(1300)\pi)/\Gamma(4\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_9/Γ_4
• • • We do not use the following data for averages, fits, limits, etc. • • •				

NODE=M152R17
NODE=M152R17 $\Gamma(a_1(1260)\pi)/\Gamma(4\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{10}/Γ_4
• • • We do not use the following data for averages, fits, limits, etc. • • •				

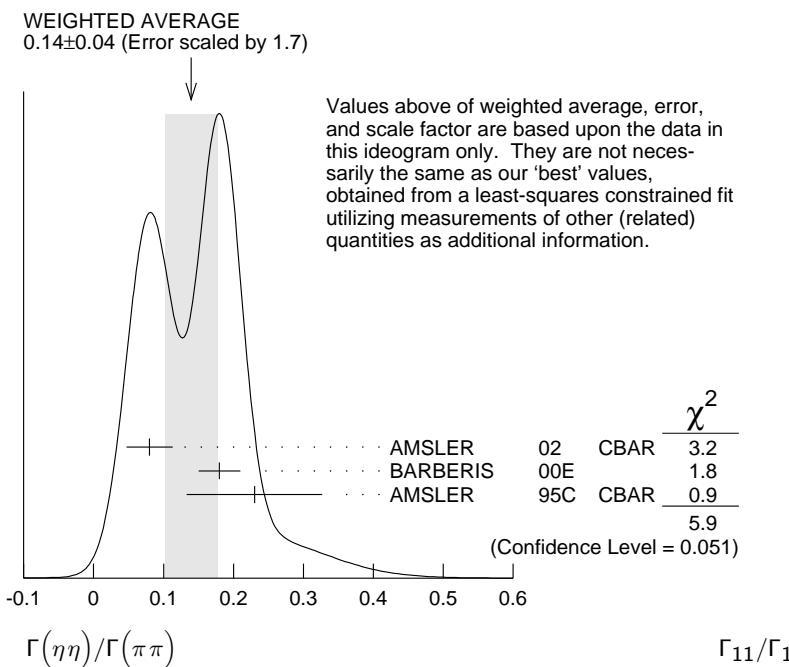
NODE=M152R18
NODE=M152R18 $\Gamma(\eta\eta)/\Gamma_{\text{total}}$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{11}/Γ
• • • We do not use the following data for averages, fits, limits, etc. • • •				
large	ALDE 88	GAM4 300 $\pi^- N \rightarrow \eta\eta\pi^- N$		
large	BINON 83	GAM2 38 $\pi^- p \rightarrow 2\eta n$		

NODE=M152R1
NODE=M152R1 $\Gamma(\eta\eta)/\Gamma(\pi\pi)$

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{11}/Γ_1
0.145±0.027 OUR FIT	Error includes scale factor of 1.5.			
0.14 ± 0.04 OUR AVERAGE	Error includes scale factor of 1.7. See the ideogram below.			
0.080 ± 0.033	AMSLER 02	CBAR 0.9 $\bar{p}p \rightarrow \pi^0 \eta\eta, \pi^0 \pi^0 \pi^0$		
0.18 ± 0.03	BARBERIS 00E	450 $p p \rightarrow p_f \eta\eta p_s$		
0.230 ± 0.097	38 AMSLER 95C	CBAR 0.0 $\bar{p}p \rightarrow \eta\eta\pi^0$		
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.11 ± 0.03	36 ANISOVICH 02D	SPEC Combined fit		
0.078 ± 0.013	39 ABELE 96C	RVUE Compilation		
0.157 ± 0.060	40 AMSLER 95D	CBAR 0.0 $\bar{p}p \rightarrow \pi^0 \pi^0 \pi^0, \pi^0 \eta\eta, \pi^0 \pi^0 \eta$		

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 $\Gamma(4\pi^0)/\Gamma(\eta\eta)$

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.8±0.3	ALDE	87 GAM4	100 $\pi^- p \rightarrow 4\pi^0 n$

 $\Gamma(\eta\eta'(958))/\Gamma(\pi\pi)$

VALUE	DOCUMENT ID	TECN	COMMENT
0.055±0.024 OUR FIT Error includes scale factor of 1.8.			
0.095±0.026	BARBERIS	00A	$450 \bar{p}p \rightarrow p_f \eta\eta p_s$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.005±0.003	36 ANISOVICH	02D SPEC	Combined fit

 $\Gamma(\eta\eta'(958))/\Gamma(\eta\eta)$

VALUE	DOCUMENT ID	TECN	COMMENT
0.38±0.16 OUR FIT Error includes scale factor of 1.9.			
0.29±0.10	41 AMSLER	95C CBAR	0.0 $\bar{p}p \rightarrow \eta\eta\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.05±0.03	36 ANISOVICH	02D SPEC	Combined fit
0.84±0.23	ABELE	96C RVUE	Compilation
2.7 ± 0.8	BINON	84C GAM2	38 $\pi^- p \rightarrow \eta\eta' n$

 $\Gamma(K\bar{K})/\Gamma_{\text{total}}$

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.044±0.021	BUGG	96 RVUE	

 $\Gamma(K\bar{K})/\Gamma(\pi\pi)$

VALUE	DOCUMENT ID	TECN	COMMENT
0.246±0.026 OUR FIT			
0.241±0.028 OUR AVERAGE			
0.25 ± 0.03	42 BARGIOTTI	03 OBLX	$\bar{p}p$
0.19 ± 0.07	43 ABELE	98 CBAR	0.0 $\bar{p}p \rightarrow K_L^0 K^\pm \pi^\mp$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.16 ± 0.05	36 ANISOVICH	02D SPEC	Combined fit
0.33 ± 0.03 ± 0.07	BARBERIS	99D OMEG	450 $p p \rightarrow K^+ K^-, \pi^+ \pi^-$
0.20 ± 0.08	44 ABELE	96B CBAR	0.0 $\bar{p}p \rightarrow \pi^0 K_L^0 K_L^0$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT	Γ_{13}/Γ_{11}
1.69±0.33 OUR FIT		Error includes scale factor of 1.4.			
1.85±0.41		BARBERIS 00E	450 $p p \rightarrow p_f \eta \eta p_s$		
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.5 ± 0.6	36	ANISOVICH 02D	SPEC	Combined fit	
<0.4	90	PROKOSHKIN 91	GAM4	$300 \pi^- p \rightarrow \pi^- p \eta \eta$	
<0.6	46	BINON 83	GAM2	$38 \pi^- p \rightarrow 2\eta n$	
35 Excluding $\rho\rho$ contribution to 4π .					
36 From a combined K-matrix analysis of Crystal Barrel (0. $p\bar{p} \rightarrow \pi^0 \pi^0 \pi^0 \pi^0$, $\pi^0 \eta \eta$, $\pi^0 \pi^0 \eta$), GAMS ($\pi p \rightarrow \pi^0 \pi^0 n$, $\eta \eta n$, $\eta \eta' n$), and BNL ($\pi p \rightarrow K\bar{K} n$) data.					
37 From the combined data of ABELE 96 and ABELE 96C.					
38 Using AMSLER 95B ($3\pi^0$).					
39 2π width determined to be 60 ± 12 MeV.					
40 Coupled-channel analysis of AMSLER 95B, AMSLER 95C, and AMSLER 94D.					
41 Using AMSLER 94E ($\eta \eta' \pi^0$).					
42 Coupled channel analysis of $\pi^+ \pi^- \pi^0$, $K^+ K^- \pi^0$, and $K^\pm K_S^0 \pi^\mp$.					
43 Using $\pi^0 \pi^0$ from AMSLER 95B.					
44 Using AMSLER 95B ($3\pi^0$), AMSLER 94C ($2\pi^0 \eta$) and SU(3).					
45 Combining results of GAM4 with those of WA76 on $K\bar{K}$ central production.					
46 Using ETKIN 82B and COHEN 80.					

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